Hurricanes

Science Literacy Article

Hurricanes are enormous storms that form in the ocean which bring extremely *powerful winds* and *heavy rain* to coastal regions. Although hurricanes vary in intensity, they all have the ability to cause mass devastation.

In order for hurricanes to form, a few very important conditions must be present.

- First, hurricanes need *warm* ocean water of 80 degrees Fahrenheit (27 degrees Celsius) or warmer.
- Next, they also require the warm, moist air of *low pressure weather systems*. Warm ocean water and warm, moist air act as the fuel for hurricanes. For this reason, hurricanes *tend to weaken once they travel over land*.
- Lastly, *light winds* are needed in order to give the storm a *counter-clockwise wind rotation*. If all of these conditions are present, then a hurricane is able to form.

Hurricane season in the Atlantic Ocean usually begins in June and ends in November. However, hurricane season can vary from year to year *based on the temperature* of the ocean water.

All hurricanes consist of 3 major components which are known as the eye, eye wall, and spiral bands.

- The **eye** is the calm, central portion of a hurricane. It is circular shaped and is typically 20 to 40 miles in diameter.
- The **eye wall** surrounds the eye and it consists of a ring of towering thunderstorms. This is where the *most severe weather* and *highest winds* occur.
- The **spiral bands** are the outer rain bands of dense thunderstorms that are able to extend *several hundreds of miles* from the center of the hurricane.

Hurricanes are categorized according to their wind speed. All hurricanes first begin as tropical depressions. **Tropical depressions** are storms with maximum wind speeds of 38 miles per hour. A tropical depression is reclassified to a **tropical storm** as the winds begin to intensify and reach speeds of 39 to 73 miles per hour. Once the wind speeds increase to 74 miles per hour or greater, these storms are then officially classified as **hurricanes**. The Saffir-Simpson Hurricane Wind scale is used to measure the intensity of a hurricane. This scale ranks hurricanes from Category 1 to Category 5 based on their wind speed. *Category 1 hurricanes are the weakest* and have wind speeds of 74 – 95 miles per hour. *Category 5 hurricanes are the strongest* and have wind speeds of 157 miles per hour or higher.

Hurricanes not only bring *extremely damaging winds*, but also *extreme flooding* due to strong storm surges and large amounts of rain. However, advancements in technology such as *satellite imaging*, *radar*, *coastal warning systems* and *hurricane-proof structures* have helped to significantly reduce the amount of lives lost during these catastrophic events.

Hurricanes Question Companion

For 1-5, choose the best answer.

1. Which of the following is not needed for a hurricane to form?
   a. Warm ocean water of 80°F or more
   b. Light winds that spin the storm counter-clockwise
   c. High pressure weather systems
   d. Low pressure weather systems

2. What happens in the eye of a hurricane?
   a. This is the calm center of the hurricane.
   b. The most severe weather and highest winds.
   c. Dense thunderstorms that spur tornadoes.
   d. Heavy rain and low winds.

3. Which scale is used to measure hurricane strength?
   a. Fujita-Pearson Scale
   b. Saffir-Simpson Scale
   c. Hurricane Rating System
   d. Emergency Weather System

4. When a storm intensifies to winds of 39 to 73 mph, what is its classification?
   a. Tropical Depression
   b. Tropical Storm
   c. Hurricane
   d. Tropical Wave

5. True or False: Hurricanes often get stronger as they move over land due to street heating.
   a. True
   b. False

Fill in the blank(s) with the correct answer for 6-9.

6. All hurricanes begin as _____.
7. Category 1 hurricanes are the _____ and Category 5 hurricanes are the _____.
8. The storms that extend several hundred miles from the center of the hurricane are called _____.
9. The most intense storms are located in the _____ of a hurricane.
10. Meteorologists and climate scientists use advanced computer models to try and chart the paths of hurricanes as they approach land. This is one way of trying to reduce damage and loss of life. What are some other ways that we try and reduce damage? Write your answer in complete sentences.

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